

REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested in view of the foregoing amendments and the following remarks. Claims 48-53, 55, and 57-84 are currently pending.

Objection to the Disclosure

The disclosure has been objected to because the text on the top of page 14 is alleged to be confusing. The portion objected to by the Examiner states “The arc traced by distal tip 235 would again be circular, but in this case, the initial motion of the tip 235 would be parallel to the axis of pawl 230.” As can be seen from FIG. 2B, when the pawl is rotated about the point 254 as described in the above sentence, the *initial* motion of the tip of the pawl would in fact be parallel to the pawl axis just as stated in the text. This motion would continue in an circular arc shaped motion as described.

If upon further review, the Examiner still believes that the language discussed above is confusing or inaccurate, Applicant would be glad to clarify this matter in a telephone interview.

Rejections under 35 U.S.C. §112

Claims 48-54, 56, and 63 have been rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claim 48 is alleged to be confusing in indicating that the hinges are tapered from the first end to the second end, when the taper in the example shown in the drawings extends over a portion of this length. Claim 48 has been amended to incorporate the subject matter of dependent Claim 54 and the language alleged to be indefinite has been removed.

In Claims 54 and 63, the term “ductile” has been objected to as lacking antecedent basis and has been deleted. Claim 56 has been objected to as confusing and has been canceled.

Rejections under 35 U.S.C. §102 and §103

Claims 48-53 and 55-62 have been rejected under 35 U.S.C. §102 or §103 as anticipated by or obvious over Drasler et al. (6,451,051).

Claims 48-50, 52, 54-59, 61, and 63 have been rejected under 35 U.S.C. §102 or §103 as anticipated by or obvious over Kranz (WO 98/18407).

Claim 48

Claim 48 has been amended to incorporate the subject matter of dependent Claim 54. Since Claim 54 has not been rejected based on Drasler et al., Claim 48 as amended is believed to be patentable over Drasler et al.

Claim 48 recites an expandable medical device including a plurality of elongated beams and a plurality of hinges connecting the elongated beams. The plurality of hinges are each tapered such that an end of each hinge closer to an apex of the V-shapes formed by the adjacent elongated beams has a width which is greater than a width of the hinge at an opposite end.

The Office Action states that “the tapered transition portions at each end of the narrowed regions” of Kranz can be considered the tapered hinges. Applicant respectfully disagrees. The term “hinge” as used in the present application refers to a part that bends. This is consistent with Merriam Webster’s Collegiate Dictionary, Tenth Edition, which defines “hinge” as “a jointed or flexible device on which a door, lid, or other swinging part turns” or “a flexible ligamentous joint.”

The locally reduced cross section portions 13, 14, 15, shown in FIGS. 2a-c of Kranz include narrowed hinge regions and transition regions at each end. As clearly shown in Kranz and easily illustrated by basic structural analysis, it is the narrowed hinge regions of Kranz between the transition regions which bend. The transition regions at either end of the narrowed hinge regions are wider than the hinge regions and do not bend. Thus, the transition regions of Kranz cannot be considered the tapered hinges of Claim 48 because they are not flexible and do not bend upon application of an opening force to the structure of Kranz. For at least this reason, Claim 48 is allowable over Kranz.

Claim 55

Claim 55 recites a plurality of elongated beams and a plurality of hinges connecting the beams. The plurality of hinges are tapered with the hinge width, hinge length, and taper adjusted to achieve a desired value of the maximum strain along the hinge.

As described in the present application, locally reduced cross section portions concentrate plastic strain at a narrowest portion. For example, WO 96/29028 uses pairs of circular holes which concentrate plastic strain at the narrowest portion. This concentration of plastic strain makes the stent highly vulnerable to failure.

The result for a long hinge of constant cross section has a similar concentration of maximum strain at one point along the hinge length. With a long hinge of constant cross section, it can be seen that strain and peak stresses, and thus curvature, are concentrated at a location close to the hinge end, rather than uniformly distributed along the entire length of the hinge.

With a constant cross section reduced section as shown in FIGS. 2a-c of Kranz, bending is concentrated at a location closest to the structural member 4. This results in a local maximum strain at a point along the hinge length closest to the member 4. Thus, the straight reduced section results in the concentration of the maximum strain at a point rather than distributed along the hinge.

Accordingly, Kranz does not teach or suggest a hinge which is tapered with the hinge width, hinge length, and taper adjusted to achieve a desired value of the maximum strain along the hinge. Instead, the Kranz hinge has a concentrated strain at one location. Thus, Claim 55 is patentable over Kranz.

Drasler et al. describes a tapered hinge with a smallest hinge width closest to an apex of the V-shape formed by the adjacent elongated beams. This configuration is the opposite taper to the present invention. The Drasler et al. tapered configuration concentrates strain to an even greater extent than Kranz at a location of the hinge closest to the apex of the V-shapes. Accordingly, Drasler et al. concentrates maximum strain at one location rather than achieving the maximum strain distributed along the hinge as in the invention of Claim 55. Accordingly, Claim 55 is allowable.

In the event that there are any questions concerning this response or the application in general, the Examiner is respectfully urged to telephone the undersigned attorney so that prosecution may be expedited.

Respectfully submitted,

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